

Application No. 10/784,751
Attorney Docket No. 13DV-14085 (07783-0113-01)

D.) AMENDMENTS TO THE DRAWINGS

None.

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E.) REMARKS

This Response is filed in response to the Office Action dated January 3, 2006.

Upon entry of this Response, claims 1-20 and 28-31 will be pending in the Application.

In the outstanding Office Action, the Examiner withdrew from consideration claims 21-26; rejected claim 27 under 35 U.S.C. 112, second paragraph, as being indefinite; rejected claims 1, 5-11, 14, 15, 17, 18 and 27 under 35 U.S.C. 102(b) as being anticipated by Hillig et al. (U.S. Patent No. 4,917,941) hereinafter "Hillig"; rejected claims 1, 6, 8-11 and 15 under 35 U.S.C. 102(b) as being anticipated by Fareed et al. (U.S. Publication No. 2002/0058107) hereinafter "Fareed"; rejected claims 1-18 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Tani (U.S. Publication No. 2003/0145934) hereinafter "Tani" in view of Hillig; rejected claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Tani in view of Hillig in further view of Colegrove et al. (U.S. Patent No. 6,096,669) hereinafter "Colegrove"; rejected claims 1-20 and 27 under the doctrine of nonstatutory obviousness-type double patenting.

Claim 1 has been amended to better define the invention, i.e., the nonwoven mat is dry and porous as applied. Support for the amendment can be found at least at paragraph [0022].

Election/Restriction

The Examiner had required restriction to one of the following inventions under 35 U.S.C. § 121:

- I. Claims 1-20, 27 drawn to a ceramic matrix composite, classified in class 442, subclass 178; and
- II. Claims 21-26 drawn to a method of making a ceramic matrix, classified in class 264, various subclasses.

Applicant hereby affirms, without prejudice, the provisional election of invention I, directed to claims 1-20, 27 made on October 4, 2005. In addition, newly added claims 28-31, which are directed to a ceramic matrix composite, are believed to be part of invention I and are also elected by Applicant. Finally, as Applicant has cancelled claims 21-26 of the Application in this Response, it is respectfully submitted that the restriction requirement is now moot.

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Rejection under 35 U.S.C. 102

A. Claims 1, 5-11, 14, 15, 17, 18 and 27

The Examiner rejected claims 1, 5-11, 14, 15, 17, 18 and 27 under 35 U.S.C. 102(b) as being anticipated by Hillig.

Specifically, the Examiner stated that

a. Hillig et al. teach a fiber and a filament containing ceramic perform comprised of a mixture of discontinuous fibers surrounding a layer of continuous filaments extending through the mixture. The mixture is produced by and infiltrated with a molten ceramic to produce a composite (Abstract). The continuous fibers provide reserve strength to the composite should it crack and the discontinuous fibers provide toughness to the composite (col. 1, line 61-col. 2, line 12). The discontinuous fibers may be chopped silicon carbide fibers or a mixture of different ceramic fibers (col. 3, lines 1-20). The continuous fibers may be made of silicon carbide or a mixture of different ceramic fibers (col. 5, lines 43-49).

b. The structure of the applied article has a layer containing a plurality of continuous ceramic filaments adjacent a layer of chopped ceramic fibers located in a continuous matrix phase which is adjacent another layer containing a plurality of continuous ceramic filaments (claim 5). A number of chemical species are available for use as the infiltrant to create the continuous matrix including ceramics (col. 4, lines 1-14). The Examiner takes the position that the chopped ceramic fibers that are located in the applied invention's matrix constitute a nonwoven mat of chopped fibers. This is based upon the fact that the matrix contains a plurality of fibers, which are bound together by the matrix creating a mat. Therefore, the applied article constitutes a plurality of continuous ceramic fiber layers (lamina) each separated by a layer of ceramic matrix that has a nonwoven mat layer of chopped ceramic fibers within it. The continuous matrix phase is to be distributed evenly throughout the composite to create the instantly claimed infiltrated article (col. 11, lines 6-13). Claim 5 is rejected as the ceramic fibers may have a length of from about 10 to about 2000 microns (0.0004 to 0.08 inches) (col. 3, lines 13-15). Claim 14 is rejected as the ceramic chopped fibers have diameters up to 10 microns (0.0004 inches) (col. 3, lines 10-15).

c. Claims 8-11 are rejected as the matrix phase of the applied invention is designed to fill the space the between adjacent layers of continuous filaments thereby reducing the number of inter-laminar voids, size and volume fraction of said voids. The continuous matrix is to be distributed evenly throughout the composite and as such would evenly distribute the inter-laminar voids.

Applicants respectfully traverse the rejection of claims 1, 5-11, 14, 15, 17, 18 and 27 under 35 U.S.C. 102(b).

Hillig, as understood, is directed to a fiber and filament-containing preform containing a mixture of discontinuous fibers and particulates surrounding a layer of continuous filaments. The mixture of discontinuous fibers and particulates are applied in the form of a suspension.

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In contrast, independent claim 1 recites an improved ceramic matrix composite laminate comprising: a plurality of preform lamina, each of the preform lamina being formed of directional continuous ceramic fiber in a ceramic matrix; a dry, porous layer of nonwoven mat including a plurality of chopped ceramic fibers, the nonwoven mat being interposed between adjacent preformed continuous fiber lamina of the plurality of preform lamina to form an interface between the continuous fiber lamina which reduces voids and prevents a continuous, stratified matrix rich layer between adjacent continuous fiber preform lamina; and a matrix of compatible ceramic material infiltrated into the continuous fiber ceramic lamina and the chopped fiber nonwoven mat lamina.

The examiner is reminded that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).” See Manual of Patent Examining Procedure, 8th Edition (MPEP), Section 2131.

In addition, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).” See MPEP, Section 2131.

Several of the features recited by Applicant in independent claim 1 are not taught or suggested by Hillig. First, Hillig does not teach or suggest a mat as recited by Applicant in independent claim 1. Hillig discloses producing a suspension of a mixture of ceramic fibers and particulates in a liquid vehicle, or alternately, removing a sufficient amount of liquid vehicle from the suspension to produce a moldable mass which is molded to form a first layer of a molded compact. In either event, neither Hillig construction can be properly considered a mat. *Merriam-Webster's Collegiate Dictionary, Tenth Edition* defines a mat as a piece of coarse, woven, plaited, or felted fabric used especially as a floor covering or a support, or something made up of densely tangled or adhering strands especially of organic matter. Accordingly, neither a suspension nor a moldable mass can be properly considered a mat.

Merely for reasons of argument, if somehow the Hillig construction could be considered a mat, which it isn't, then Hillig certainly cannot be properly considered a dry, porous layer of

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nonwoven mat, as recited in claim 1, as amended. That is, claim 1, recites a dry, porous layer of nonwoven mat is provided and interposed between adjacent preformed continuous fiber lamina, without other materials to fill the porosity of the mat. Paragraph [0022] of the Specification of the present invention provides that only a bonding agent, such as polyvinyl alcohol, is mixed with the fibers, but after the fibers are pulled into a thin fabric layer, the layer is dried, removing the bonding agent, which removal occurring prior to using the mat to form the ceramic matrix composite laminate. In contrast, both of the embodiments of Hillig are suspensions, with the second suspension embodiment having sufficient liquid removed to produce a moldable mass, the suspension layers being applied while still moist. Therefore, Hillig is not only not dry, but saturated with liquid, which means the Hillig suspension constructions are also not considered porous.

Thus, since Hillig does not teach or suggest all of the limitations recited in independent claim 1, Applicant respectfully submits that Hillig does not anticipate Applicant's invention as recited in independent claim 1.

Therefore, for the reasons given above, independent claim 1 is believed to be distinguishable from Hillig and therefore are not anticipated nor rendered obvious by Hillig.

Dependent claims 5-11, 14, 15, 17 and 18 are believed to be allowable as depending from what is believed to be allowable independent claim 1 for the reasons given above. Claim 27 was cancelled in this Response. In addition, claims 5-11, 14, 15, 17 and 18 recite further limitations that distinguish over the applied art. In conclusion, it is respectfully submitted that claims 1, 5-11, 14, 15, 17 and 18 are not anticipated nor rendered obvious by Hillig and are therefore allowable.

B. Claims 1, 6, 8-11 and 15

The Examiner rejected claims 1, 6, 8-11 and 15 under 35 U.S.C. 102(b) as being anticipated by Fareed.

Specifically, the Examiner stated that

a. Fareed et al teach a composite comprising adjacent plies of fiber tows/bundles (e.g. silicon carbide fiber) separated by a continuous ceramic matrix [0122, 0123]. Within the matrix chopped silicon carbide fibers may be added [0126]. The Examiner takes the position that the chopped ceramic fibers that are located in the applied invention's matrix constitute a nonwoven mat of chopped fibers. This is based upon the fact that the matrix contains a plurality of fibers, which are bound together by the matrix creating a mat. Therefore, the applied article

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constitutes a plurality of continuous ceramic fiber layers (lamina) each separated by a layer of ceramic matrix that has a nonwoven mat layer of chopped ceramic fibers within it.

b. Claims 8-11 are rejected as the matrix phase of the applied invention is designed to fill the space the between adjacent layers of continuous filaments thereby reducing the number of inter-laminar voids, size and volume fraction of said voids. The continuous matrix is to be distributed evenly throughout the composite and as such would evenly distribute the inter-laminar voids.

Applicants respectfully traverse the rejection of claims 1, 6, 8-11 and 15 and 27 under 35 U.S.C. 102(b).

Fareed, as understood, is directed to a composite comprising adjacent plies of fiber tows/bundles separated by a matrix of materials having a coefficient thermal expansion that is closer in value to the coefficient thermal expansion of the fiber plies than previous constructions. The matrix includes silicon carbide particulates, but can also use platelets, whiskers or chopped fibers.

In contrast, independent claim 1 recites an improved ceramic matrix composite laminate comprising: a plurality of preform lamina, each of the preform lamina being formed of directional continuous ceramic fiber in a ceramic matrix; a dry, porous layer of nonwoven mat including a plurality of chopped ceramic fibers, the nonwoven mat being interposed between adjacent preformed continuous fiber lamina of the plurality of preform lamina to form an interface between the continuous fiber lamina which reduces voids and prevents a continuous, stratified matrix rich layer between adjacent continuous fiber preform lamina; and a matrix of compatible ceramic material infiltrated into the continuous fiber ceramic lamina and the chopped fiber nonwoven mat lamina.

The examiner is reminded that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).” See Manual of Patent Examining Procedure, 8th Edition (MPEP), Section 2131.

In addition, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).” See MPEP, Section 2131.

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Several of the features recited by Applicant in independent claim 1 are not taught or suggested by Fareed. First, Fareed does not teach or suggest a mat as recited by Applicant in independent claim 1. Fareed first discloses introducing into the matrix one or more materials having a relatively low coefficient of thermal expansion, i.e., lower than the matrix material, such as silicon carbide particulate. Additionally, other forms of silicon carbide can be used, such as platelets, whickers or chopped fibers. Fareed does not teach or suggest that the matrix with the silicon carbide is presented in the form of a mat, since the word mat does not appear in Fareed. Therefore, it is improper for the Examiner to characterize the matrix as a mat. *Merriam-Webster's Collegiate Dictionary, Tenth Edition* defines a mat as a piece of coarse, woven, plaited, or felted fabric used especially as a floor covering or a support, or something made up of densely tangled or adhering strands especially of organic matter, such as a mat of hair. In other words, for the matrix in Fareed to possibly be considered a mat, a considerable amount of fibers must outwardly protrude from the matrix material. Not only is there no disclosure that this indeed is the case, but such a configuration provides no benefit in the Fareed construction because for the benefit of the matrix mixed with fibers or particulates to be realized, the particulates must be mixed within the matrix material so as to reduce the coefficient of thermal expansion.

Merely for reasons of argument, if somehow the Fareed construction could be considered a mat, which it isn't, then Fareed certainly cannot be properly considered a dry, porous layer of nonwoven mat, as recited in amended claim 1. That is, claim 1 recites a dry, porous layer of nonwoven mat is provided and interposed between adjacent preformed continuous fiber lamina, without other materials to fill the porosity of the mat. Paragraph [0022] of the Specification of the present invention provides that only a bonding agent, such as polyvinyl alcohol, is mixed with the fibers, but after the fibers are pulled into a thin fabric layer, the layer is dried, removing the bonding agent, which removal occurring prior to using the mat to form the ceramic matrix composite laminate. In contrast, in Fareed, the matrix is supplied first, to which is added silicon carbide material. Thus, the Fareed matrix construction, by virtue of the presence of the matrix material as applied to the fiber tow plies cannot be a dry, porous layer of nonwoven mat.

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Thus, since Fareed does not teach or suggest all of the limitations recited in independent claim 1, Applicant respectfully submits that Fareed does not anticipate Applicant's invention as recited in independent claim 1.

Therefore, for the reasons given above, independent claim 1 is believed to be distinguishable from Fareed and therefore is not anticipated nor rendered obvious by Fareed.

Dependent claims 6, 8-11 and 15 are believed to be allowable as depending from what is believed to be allowable independent claim 1 for the reasons given above. In addition, claims 6, 8-11 and 15 recite further limitations that distinguish over the applied art. In conclusion, it is respectfully submitted that claims 1, 6, 8-11 and 15 are not anticipated nor rendered obvious by Fareed and are therefore allowable.

Rejection under 35 U.S.C. 103

A. Claims 1-18 and 27

The Examiner rejected claims 1-18 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Tani in view of Hillig.

Specifically, the Examiner stated that

thereby reducing the number of inter-laminar voids, size and volume fraction of said voids. The continuous matrix is to be distributed evenly throughout the composite and as such would evenly distribute the inter-laminar voids.

e. Since Tani and Hillig et al. are from the same field of endeavor (i.e. fiber-reinforced silicon carbide composites), the purpose disclosed by Hillig et al. would have been recognized in the pertinent art of Tani.

f. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have made the nonwoven layers of Tani with the chopped ceramic fibers of Hillig et al. The skilled artisan would have been motivated by the desire to provide the composite with toughness (col. 1, line 61-col. 2, line 12, Hillig et al.).

g. Tani and Hillig et al. disclose the claimed invention except for the instantly claimed nonwoven mat thickness. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the nonwoven mat layer between 0.001 and 0.002 inches thick, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Al/er*, 105 USPQ 233. Therefore, claims 2 and 3 are rejected.

h. Claim 4 is rejected as it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the nonwoven mat layer with randomly oriented chopped fibers. The skilled artisan would have been motivated to use said fibers, because randomly oriented fibers within the continuous matrix would have afforded the matrix thermal,

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mechanical, and electrical enhancement that is isotropic. Isotropic properties afford the nonwoven layer minimized thermal and mechanical stresses that occur when there is a mismatch between phases of a composite.

Tani and Hillig et al. disclose the claimed invention except for the instantly claimed nonwoven mat porosity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the nonwoven mat layer with porosity of about 80 to 90 percent, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Therefore, claims 12 and 13 are rejected.

Applicants respectfully traverse the rejection of claims 1-18 and 27 under 35 U.S.C. § 103(a).

The previous discussion of Hillig is equally applicable herein.

Tani, as understood, is directed to a process of producing a multi-layer fiber-reinforced silicon carbide composite having an amount of toughness.

In contrast, independent claim 1 recites an improved ceramic matrix composite laminate comprising: a plurality of preform lamina, each of the preform lamina being formed of directional continuous ceramic fiber in a ceramic matrix; a dry, porous layer of nonwoven mat including a plurality of chopped ceramic fibers, the nonwoven mat being interposed between adjacent preformed continuous fiber lamina of the plurality of preform lamina to form an interface between the continuous fiber lamina which reduces voids and prevents a continuous, stratified matrix rich layer between adjacent continuous fiber preform lamina; and a matrix of compatible ceramic material infiltrated into the continuous fiber ceramic lamina and the chopped fiber nonwoven mat lamina.

Several of the features recited by Applicant in independent claim 1 is not taught or suggested by Tani or Hillig. First, neither Tani nor Hillig teaches or suggests a dry, porous layer of nonwoven mat including a plurality of chopped ceramic fibers. Tani teaches nonwoven fibers to the extent that the fibers are transversely laid sheet-like unidirectional fiber prepregs, which include matrix material. The Examiner states that Tani is silent as to the use of chopped fibers. In other words, the Examiner is conceding that Tani does not teach or suggest the use of chopped fibers. The Examiner cites Example 3 of Tani to show that two layers each of nonwoven fibers and woven fibers can be alternately applied. While Example 3 may show the alternate application, what the Examiner fails to note is that each pair of plies has already been laminated

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in resin, and that none of the plies include chopped ceramic fibers. For reasons not contained in the Office Action, the Examiner concludes that it would have been obvious to make the nonwoven layers of Tani with the chopped ceramic fibers of Hillig. Although Applicant respectfully disagrees with the Examiner's conclusion, the Examiner's prospective combination of fibers still fails to yield the present invention, since the ceramic fibers of Hillig are moist (not dry).

Furthermore, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination." See Manual of Patent Examining Procedure, 8th Edition (MPEP), Section 2143.01.

The Examiner is reminded that "[i]f the proposed modification or combination of the prior art would change the principle or operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." See MPEP, Section 2143.01.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

See Manual of Patent Examining Procedure, 8th Edition (MPEP), Section 2143.03.

Therefore, for the reasons given above, independent claim 1 is believed to be distinguishable from Tani and/or Hillig and therefore is not anticipated nor rendered obvious by Tani and/or Hillig.

Dependent claims 2-18 are believed to be allowable as depending from what is believed to be allowable independent claim 1 for the reasons given above. Claim 27 has been canceled, so the rejection is considered moot. In addition, claims 2-18 recite further limitations that distinguish over the applied art. In conclusion, it is respectfully submitted that claims 1-18 are not anticipated nor rendered obvious by Fareed and are therefore allowable.

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B. Claims 19-20

The Examiner rejected claims 19-20 under 35 U.S.C. § 103(a) as being unpatentable over Tani in view of Hillig, and further in view of Colegrove.

Specifically, the Examiner stated that

a. Colegrove et al. teach a preform suitable for use in creating a composite laminate (Abstract). Figure 5 shows an embodiment of the preform comprising a nonwoven layer 20, resin 8, and unidirectional fiber layer 10. The unidirectional fibers may be silicon carbide (col. 4, lines 24-26) and the nonwoven mat may be made of chopped silicon carbide fibers (col. 4, lines 52-55). Multiple plies of the Colegrove et al. invention may be laminated together (col. 5, lines 49-53). The lamination of two preforms of Figure 5 with the nonwoven layers 20 would result in a symmetric article with two nonwoven layer adjacent layers of resin 8, and adjacent two layers of unidirectional layers 10.

b. Since Tani and Colegrove et al. are from the same field of endeavor (i.e. silicon carbide fiber composites), the purpose disclosed by Colegrove et al. would have been recognized in the pertinent art of Tani.

c. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the article of Tani and Hillig et al. to include multiple layers of the nonwoven mat of Tani between the layers of directional continuous ceramic fibers. The skilled artisan would have been motivated by the desire to create an article that possesses enhanced thermal properties with the inclusion of additional chopped silicon carbide fibers. The enhanced thermal property allows the composite to have a more uniform thermal expansion, thereby decreasing the thermal stresses that buildup due to mismatched coefficient of thermal expansions between its phases.

Applicants respectfully traverse the rejection of claims 19-20 under 35 U.S.C. § 103(a).

The previous discussion of Tani and Hillig is equally applicable herein.

Colegrove, as understood, is directed to a preform suitable for resin transfer molding.

Dependent claims 19-20 are believed to be allowable as depending from what is believed to be allowable independent claim 1 for the reasons given above. In addition, claims 19-20 recite further limitations that distinguish over the applied art. In conclusion, it is respectfully submitted that claims 19-20 are not anticipated nor rendered obvious by Fareed and are therefore allowable.

Rejection under 35 U.S.C. 112

The Examiner rejected claim 27 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter applicant

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regards as the invention. In response thereto, claim 27 is canceled, thereby rendering the rejection moot.

Rejection under Obvious-type Double Patenting

The Examiner provisionally rejected claims 1-20 and 27 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 7 of copending Application No. 10/703,272. The Examiner stated .

Although the conflicting claims are not identical, they are not patentably distinct from each other because both inventions are directed to ceramic matrix composites reinforced with discontinuous ceramic fibers.

Applicant respectfully traverses the rejection of claims 1-20 and 27 on the ground of nonstatutory obviousness-type double patenting.

Claim 7 of copending Application No. 10/703,272 recites an assembly in accordance with claim 1 wherein said body further comprises a chopped fiber sheet positioned between said metallic wire mesh and one of said two adjacent plies of said body, said metallic wire mesh is bonded to said sheet and said sheet is bonded to at least one of said two adjacent plies of said body. (emphasis added) In contrast, none of claims 1-20 and newly added claims 28-31 recite metallic wire mesh, which is not surprising, since the term "metal" does not appear in the present invention. Since claims 1-20 and 28-31 lack the limitation of a metallic wire mesh, Applicant submits that 1-20 and 28-31 are patentably distinct and do not require a terminal disclaimer.

Therefore, for the reasons stated above, claims 1-20 and 28-31 of the present invention are patentably distinct from claim 7 of copending Application No. 10/703,272, and thus, a terminal disclaimer on the ground of nonstatutory obviousness-type double patenting is not required, and the claims are allowable.

Newly Added Claims

Claims 28-31 are newly added by the Response to further define Applicant's invention, i.e., randomly oriented chopped fibers. It is submitted that no new matter has been added by new claims 28-31 because support for the claims can be found in the specification (e.g., at paragraph [0022]). Claims 28-31 are believed to be allowable for the reasons set forth greater detail above,

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as independent claim 28 contains the limitations of claim 1, and claims 29-31 depend from independent claim 28.

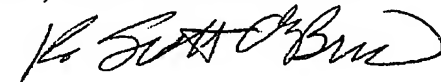
CONCLUSION

In view of the above, Applicant respectfully requests reconsideration of the Application and withdrawal of the outstanding objections and rejections. As a result of the amendments and remarks presented herein, Applicant respectfully submits that claims 1-20 and 28-31 are not anticipated by nor rendered obvious by Hillig, Tani, Fareed and Colegrove or their combination and thus, are in condition for allowance. As the claims are not anticipated by nor rendered obvious in view of the applied art, Applicant requests allowance of claims 1-20 and 28-31 in a timely manner. If the Examiner believes that prosecution of this Application could be expedited by a telephone conference, the Examiner is encouraged to contact the Applicant.

The Commissioner is hereby authorized to charge any additional fees and credit any overpayments to Deposit Account No. 50-1059.

Respectfully submitted,
MCNEES, WALLACE & NURICK

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